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EXAMINER	
PATEL, DHARTI HARIDAS	
ART UNIT	PAPER NUMBER
2836	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/764,155	KHO ET AL.	
	Examiner	Art Unit	
	DHARTI PATEL	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 February 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 November 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 9-43 are rejected under 35 U.S.C. 102(b) as being anticipated by Yuan et al., Patent No. 6,130,517.

With respect to claim 9, Yuan discloses a method [Fig. 1; the device encompasses the method] of moving a fine stage device, the method comprising connecting a fine stage [Fig. 1, 120] device to a coarse stage device [Fig. 1, 110], the coarse stage device comprising an attracting framework comprising opposing attracting members [Fig. 1, 123 and 124] and at least one target member [Fig. 1, object on top of fine stage 120; col. 3 lines 7-9], wherein the target member is located in a gap between the attracting members and connected to the fine stage device [Fig. 1; the object is mounted and therefore connected to the fine stage 120; col. 3 lines 7-9]; and manipulating the relative position of the target member with respect to the attracting members by an actuator [Fig. 9; consists of CMD 320, 121, 122; col. 6 lines 55 – col. 8 lines 47] coupled between the coarse stage device [Fig. 1; 110] and the fine stage device [Fig. 1; Fig. 9; 120] so as to decrease the distance between one of the attracting members [Fig. 1; 121, 122] and the target member [Fig. 1; Fig. 9; wafer mounted on 120] during a coarse stage adjustment phase [Fig. 1; this occurs when target 120

moves to the right towards attracting member 124 whilst stage 110 simultaneously moves to the left on base 112, as a result of target 120 being mounted on stage 110, both of which are mounted on base 112], wherein the actuator is capable of directly moving the fine stage device relative to the coarse stage device [See Response to Arguments below].

With respect to claim 10, Yuan discloses that at least one of attracting members comprises a core member and a coil assembly that is disposed near the core member, and the method further comprises providing a current to the coil assembly to cause acceleration movement of the fine stage device [Abstract, lines 9-15].

With respect to claim 11, Yuan discloses that at least one of the attracting members [Fig. 1, 123, and 124] comprises a core member and a coil assembly that is disposed near the core member, and the method further comprises providing a current to the coil assembly to cause deceleration movement of the fine stage device [the target will necessarily go through a period of deceleration as the controller signals it to go from a moving position to a fully stopped position].

With respect to claim 12, Yuan discloses a dual-force-mode fine stage apparatus [Fig. 1] comprising a first assembly including a target member [Fig. 1; an objected placed on the fine stage 120; col. 3 lines 7-9]; a second assembly including a first attracting member [Fig. 1, 123] and a second attracting member [Fig. 1, 124] located on opposite sides of the target member; and an actuator [Fig. 8, CMD; Fig. 9; CMD 320] associated with the first assembly [Fig. 8; 120], wherein the actuator [Fig. 8, CMD; Fig. 9; CMD 320] is capable of directly moving the first assembly [col. 6 lines 55 – col. 8

lines 47] to adjust a relative distance between the target member [Fig. 9; 120] and the first attracting member [Fig. 9; 121 or 123, 124]; wherein, before an acceleration phase, the actuator [Fig. 9; CMD] adjusts a gap size between the target member [Fig. 2, 120] and an attracting member [Fig. 2, 123, 124; col. 6 lines 55 – col. 8 lines 47] that provides acceleration during the accelerating phase [the target will necessarily go through a period of acceleration as the controller signals it to move from a stop position to a moving position] by moving at least one of the first attracting member [Fig. 2, 123] and the second attracting member [Fig. 2, 124] relative to the target member [Fig. 1, 120][Fig. 1; this occurs when target 120 moves to the right towards attracting member 124 whilst stage 110 simultaneously moves to the left on base 112, as a result of target 120 being mounted on stage 110, both of which are mounted on base 112], and during a constant velocity phase [col. 3 lines 54-58], the actuator changes a gap size between the target member and an attracting member that provides decelerating during a declaration phase [the target will necessarily go through a period of deceleration as the controller signals it to go from a moving position to a fully stopped position] my moving at least one of the first attracting member and the second attracting member relative to the target member [Fig. 1; this occurs when target 120 moves to the right towards attracting member 124 whilst stage 110 simultaneously moves to the left on base 112, as a result of target 120 being mounted on stage 110, both of which are mounted on base 112].

With respect to claim 13, Yuan discloses a dual-force-mode stage assembly comprising a fine stage assembly [Fig. 1, 120]; a coarse stage assembly [Fig. 1, 110],

the coarse stage assembly comprising opposing attracting members [Fig. 1, 123 and 124], each capable of drawing an electric current, with a gap between the attracting member elements; and a target member [Fig. 1, object shown on top of 120] in the gap, the target member being connected to the fine stage assembly [Fig. 1; the target member is on top of 120; col. 3 lines 7-9], wherein the coarse stage assembly is moveable along an axis independently of the fine stage assembly through a fine stage actuator [Fig. 8, CMD; Fig. 9; CMD 320; Fig. 1; the coarse stage assembly moves in 8 y-axis direction whilst the fine stage assembly can move in any direction [Fig. 1, x, y, z, theta], wherein the fine stage actuator is capable of directly moving the fine stage assembly relative to the coarse stage assembly [See Response to Arguments below]; a sensor [col. 9 lines 10-11] configured to detect a position of the target member so that the relative distance between the target member and the attracting members can be determined; and a controller [Fig. 8; controller 210] coupled to the fine stage actuator [Fig. 8; CMD; Fig. 9; CMD 320] to control the distance between the target member and the attracting members [col. 6 lines 55 – col. 8 lines 47; col. 9 lines 12-18, lines 21-23]; wherein the controller is adapted to change gap size between the target member [Fig. 1, 120] and one or more attracting members [Fig 1, 123, 124] that provide an acceleration force and/or a deceleration force to the target member during an acceleration and/or declaration phase [the target will necessarily go through a period of acceleration as the controller signals it to go from a fully stopped position to moving position; and the target will necessarily go through a period of deceleration as the controller signals it to go from a moving position to a fully stopped position] by moving the coarse stage assembly

relative to the fine stage assembly during a constant velocity phase followed by the acceleration and/or declaration phase.

With respect to claim 14, Yuan discloses a table [Fig. 1, 120] that retains an object [col. 3 lines 7-9]. The rest of the claim limitations are in rejection of claims 12 and 13.

With respect to claim 15, Yuan discloses an exposure apparatus [col. 3 lines 7-9] comprising an illumination system that irradiates radiant energy; and a stage device [Fig. 2, 120] that carries an object [col. 3 lines 7-9] disposed on a path of the radiant energy. The rest of the claim limitations are in rejection of claims 12-14.

With respect to claim 16, Yuan discloses that the object comprises a wafer [col. 3 lines 7-9] or a reticle.

With respect to claim 17, Yuan discloses a method of operating an exposure apparatus [col. 3 lines 7-9], the method comprising employing a stage device [Fig. 1, 120] to position an object, wherein the stage device comprises a table that retains the object [Fig. 1, object is on top of fine stage 120; col. 3 lines 7-9]. The rest of the claim limitations are in rejection of claim 12-14.

With respect to claim 18, Yuan discloses that the object comprises a wafer [col. 3 lines 7-9] or a reticle.

With respect to claim 19, Yuan discloses a method of making a mico-device, the method comprising a photolithography process using a stage device to position an object, wherein the stage deice comprises a table that retains the object [col. 3 lines 7-9]. The rest of the claim limitations are in rejection of claim 12-14.

With respect to claim 20, Yuan discloses that the object comprises a wafer [col. 3 lines 7-9] or a reticle.

With respect to claim 21, Yuan discloses a method of making a semiconductor device on a wafer, the method comprising operating an exposure apparatus via a stage device to position an object [col. 3 lines 4-11]. The rest of the claim limitations are in claim 12-14.

With respect to claim 22, Yuan discloses that the object comprises a wafer [col. 3 lines 7-9] or a reticle.

With respect to claim 23, Yuan discloses that the table comprises a wafer stage [Fig. 1, the fine stage 120 is the wafer stage] or a reticle stage.

With respect to claims 24-25 and 32-33, Yuan discloses an apparatus comprising: an attracting assembly [Fig. 1; actuators 121-126] including a first attracting member and a second attracting member opposing to the first attracting member, each of the attracting members generating attracting force; a target assembly [Fig. 1; 110] including a target member [Fig. 1, object on top of fine stage 120; col. 3 lines 7-9] situated between the first attracting member and the second attracting member; an actuator [Fig. 8; CMD; Fig. 9; CMD 320] provided between the attracting assembly and the target assembly to change a relative position between the attracting assembly and the target assembly, wherein the actuator is capable of directly moving the target assembly relative to the attracting assembly; and a controller coupled to the actuator, wherein the controller controls the actuator to change gap distances between the target member and the first and second attracting members during an intermission of

generating the attracting force [col. 3 lines 15-22 state that 6 degrees of freedom can be obtained by movement in the X, Y, and Z directions. Coarse stage adjustment is accomplished to maintain 400 um as stated in col. 8 lines 40-42, the target member 120 can be adjusted in the Z direction- i.e. there is a pause in the attracting force in the X or Y direction, and the controller now changes gap distances associated with the Z direction].

With respect to claims 26 and 34, Yuan discloses that the controller [Fig. 9; 210 310] controls the actuator [Fig. 9; 220 combined with the signal from CMD] to position the target member [Fig. 1; the object mounted on the fine stage 120; col. 3 lines 7-9] nearer to one of the first and the second attracting members that generates a bigger attracting force than the other one [col. 4 lines 17-24; col. 6 lines 55 – col. 8 lines 47].

With respect to claims 27 and 35, Yuan comprises a sensor [Fig. 1 and 9; position sensor Int1] connected to the controller [Fig. 9; 210, 220], wherein the sensor detects at least one of the gap distances between the target member and the first and second attracting members [col. 3 lines 29-45], and wherein the controller [Fig. 8; 210] controls the actuator [Fig. 8; 220 combined with signal from CMD] based on a signal including information of the gap distance from the sensor [Fig. 8; col. 8 lines 27-45].

With respect to claims 28 and 36, Yuan discloses that the first and second attracting members [Fig. 1; actuators 121-126] comprise a core member [col. 9 lines 49-50] and a coil wound around at least a portion of the core member, and the target member comprises a magnetic material [col. 3 lines 5-11].

With respect to claims 29 and 37, Yuan discloses that the actuator comprises a voice coil motor [col. 3 lines 24-27].

With respect to claims 30 and 38, Yuan comprises a fine stage [Fig. 1; 120] that holds an object [col. 3 lines 7-9] to be positioned, wherein the fine stage [Fig. 1; 120] is connected to the target assembly [Fig. 1; col. 3 lines 7-9; the target object is mounted, and therefore connected to the fine stage 120]; and a coarse stage [Fig. 1; coarse stage 110] moving with the fine stage [Fig. 1; 120], wherein the coarse stage is connected to the attracting assembly [Fig. 1; coarse stage 110 is connected to the attracting assembly of actuators 121-126].

With respect to claims 31 and 39, Yuan discloses that the fine stage [Fig. 1; 120] is accelerated [col. 1 lines 50-55] when the attracting force is generated by at least one of the attracting members [Fig. 1; actuators 121-126], and moves at a constant velocity [col. 3 lines 54-58] during the intermission of generating the attracting force [col. 3 lines 15-22 state that 6 degrees of freedom can be obtained by movement in the X, Y, and Z directions. Coarse stage adjustment is accomplished to maintain 400 um as stated in col. 8 lines 40-42, the target member 120 can be adjusted in the Z direction- i.e. there is a pause in the attracting force in the X or Y direction, and the controller now changes gap distances associated with the Z direction].

With respect to claim 40, Yuan discloses a method [Fig. 1; the device encompasses the method] of moving a fine stage [Fig. 1; 120] coupled to a coarse stage [Fig. 1; 110] by an electromagnetic device [Fig. 1; actuators 121-126], wherein the electromagnetic device includes a first attracting member [Fig. 1; 123], a second

attracting member [Fig. 1; 124], and a target member [Fig. 1; the objected mounted on the fine stage; col. 3 lines 7-9] situated between the first attracting member and the second attracting member, wherein the target member is connected to the fine stage [Fig. 1; the object (col. 3 lines 7-9) is mounted onto the fine stage 12o and therefore connected to the fine stage 120] and the first and second attracting members are connected to the coarse stage [Fig. 1; actuators 123 and 124 are connected to the coarse stage 110], the method comprising: accelerating the fine stage [Fig. 1; 120] by a first attracting force [col. 1 lines 50-55; the target on fine stage 120 will necessarily go through a period of acceleration as the controller signals it to go from a fully stopped position to moving position] generated in a first gap [Fig. 2; X1] between the target member [Fig. 1; wafer on 120] and the first attracting member [Fig. 2; 121; or 123] with a first distance; changing a position of the target member [Fig. 1; 120] with respect to the first and the second attracting members when the fine stage is moving at a constant velocity [col. 3 lines 54-58] by an actuator [Fig. 8; Fig. 9; CMD, 210, 220] coupled between the coarse stage and the fine stage, wherein the actuator is capable of directly moving the target member relative to the attracting members [See Response to Arguments below]; and decelerating the fine stage [the target on fine stage 120 will necessarily go through a period of acceleration as the controller signals it to go from a fully stopped position to moving position] by a second attracting force generated in a second gap [Fig. 2; X2] between the target member [Fig. 2; 120] and the second attracting member [Fig. 2; 122 or Fig. 1; 124] with a second distance.

With respect to claim 41, Yuan discloses that the electromagnetic device [Fig. 1; 121-126] does not generate the attracting force during changing the position of the target member [Fig. 1; object on fine stage 120].

With respect to claim 42, Yuan discloses that the position of the target member [Fig. 1; 120] is changed from a first position where the first gap has the first distance to a second position where the second gap has the second distance when the fine stage is moving at a constant velocity [col. 3 lines 54-58].

With respect to claim 43, Yuan discloses that the first position is where the target member [Fig. 1; 120] is positioned nearer to the first attracting member [Fig. 1; one of the actuators 123; this occurs when target 120 moves to the left towards attracting member 123 whilst stage 110 simultaneously moves to the right on base 112, as a result of target 120 being mounted on stage 110, both of which are mounted on base 112] than the second attracting member [Fig. 1; 124], and the second position is where the target member [Fig. 1; 120] is positioned nearer to the second attracting member [Fig. 1; 124; this occurs when target 120 moves to the right towards attracting member 124 whilst stage 110 simultaneously moves to the left on base 112, as a result of target 120 being mounted on stage 110, both of which are mounted on base 112] than the first attracting member [Fig. 1; 123].

Response to Arguments

Applicant's arguments filed 02/09/2009 have been fully considered but they are not persuasive.

Applicant argues that Yuan operates by generating a force that creates movement between stage 120 and stage 110, and thus does not disclose the newly recited "an actuator capable of directly moving the fine stage device relative to the coarse stage device." The examiner disagrees with this assessment. The amendment as it currently stands does not positively require a *mechanical connection* between the fine stage and coarse stage in order to move the fine stage relative to the coarse stage, as applicant is suggestively arguing. The amendment only requires the actuator be capable of causing direct movement. The force generated to create the movement between stage 120 and 110 by magnets 121-126 is sufficient to qualify as "direct" since there are no intervening components in between the magnets and the stage 120. The word "direct" by itself is not enough to qualify as a mechanical connection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DHARTI PATEL whose telephone number is (571)272-8659. The examiner can normally be reached on 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richards T. Elms can be reached on 571-272-1869. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DHARTI PATEL/
Examiner, Art Unit 2836
04/24/2009

/Albert W Paladini/
Primary Examiner, Art Unit 2836 4/27/09